Calhoun: The NPS Institutional Archive

Faculty and Researcher Publications | Faculty and Researcher Publications

2011-07

Design of a Ship Handling Game-based Simulator Using Delta3D Game Engine

Coreixas, Claudio

http://hdl.handle.net/10945/44373

http://www.nps.edu/library

Calhoun is a project of the Dudley Knox Library at NPS, furthering the precepts and goals of open government and government transparency. All information contained herein has been approved for release by the NPS Public Affairs Officer.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

Design of a Shiphandling Game-based Simulator Using the Delta3D Game Engine

LCDR Claudio Coreixas
Brazilian Navy

ccoreixa@nps.edu

Who is talking?

Brazilian Naval Academy

Rio de Janeiro - Brazil

Thanks to:

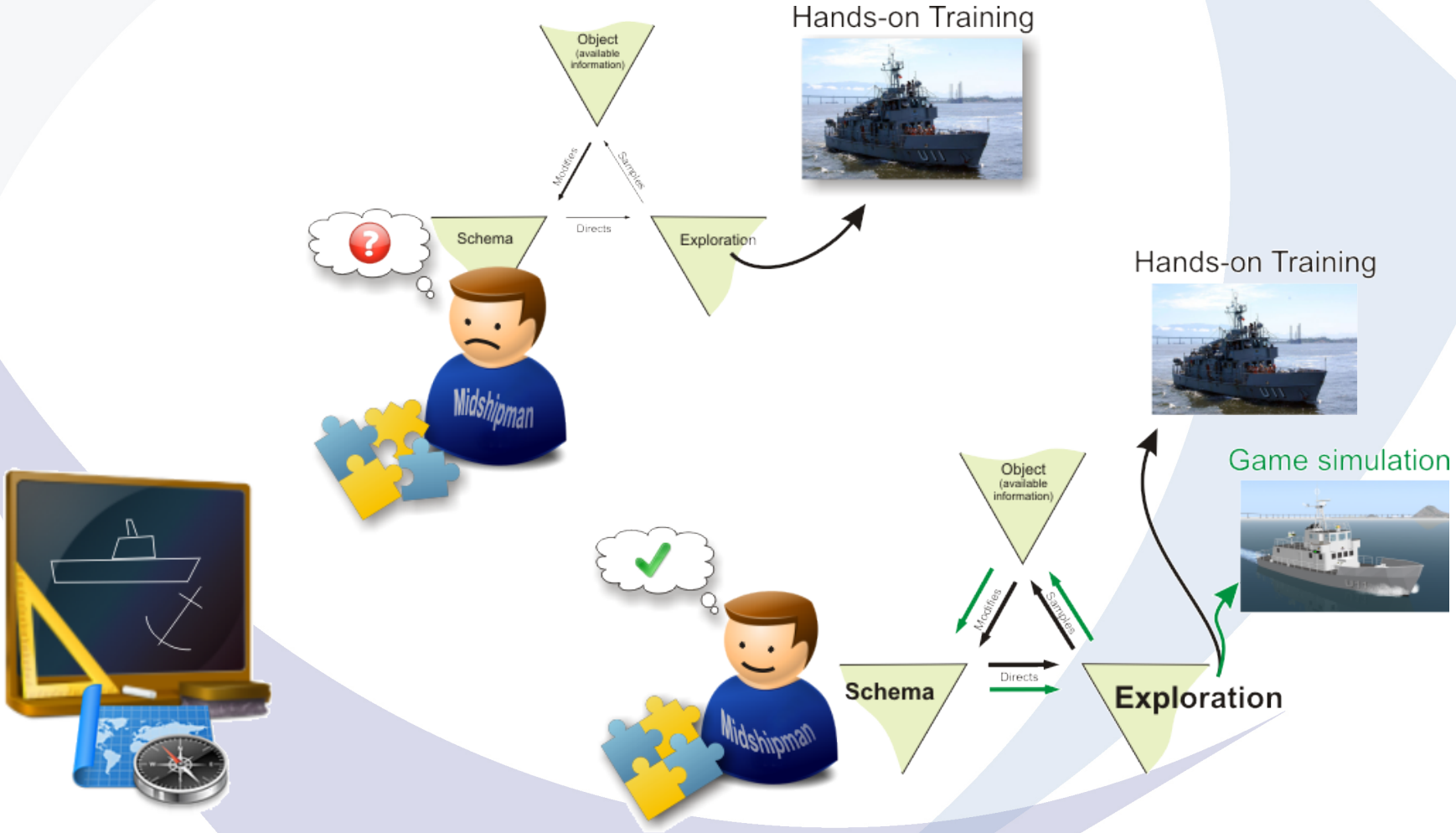
- Dr. Chris Darken (Advisor)
- Dr. Anthony Ciavarelli (Co-Advisor)
- CDR Joe Sullivan, PhD
- Dr. Ji Hyun
- Mike Day (Delta3D)
- Delta3D team (Perry and Erik Johnson)
- Classmates
- All professors in MOVES/CS/OR
- Brazilian Naval Academy
- University of São Paulo

The Problem

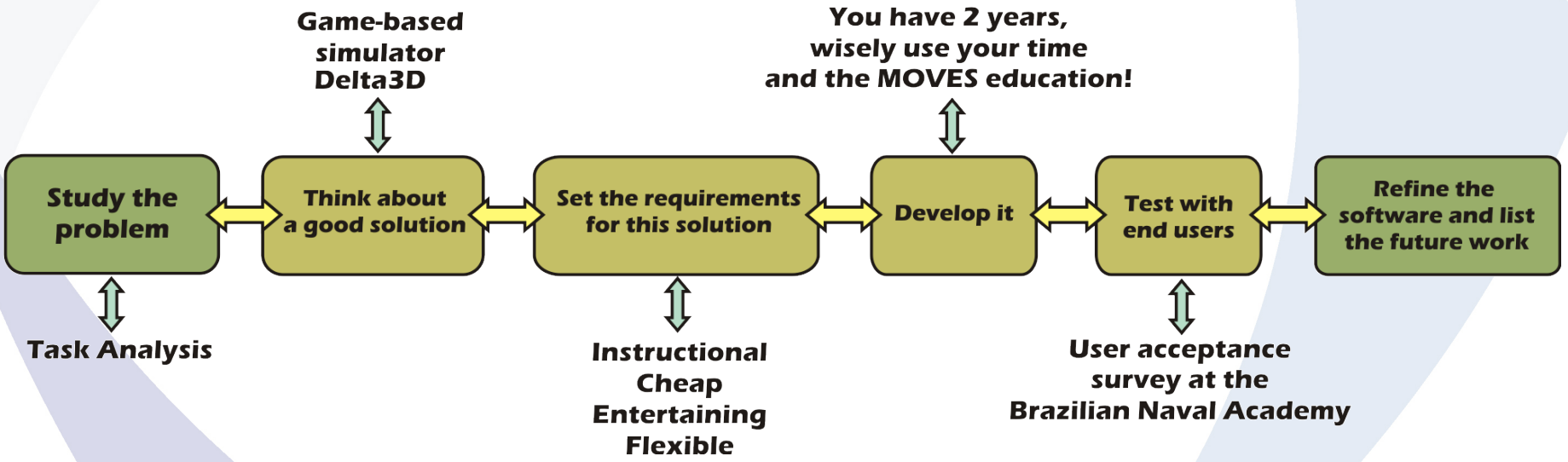
Hands-on training →

← Classroom

The Problem


Hands-on Training
Object
(available
information)
Modifies
Samples
Schema
Directs
Exploration
Midshipman
Hands-on Training
Game simulation
Object
(available
information)
Modifies
Samples
Schema
Directs
Exploration
Midshipman

The plan to solve the problem



Finding a good solution

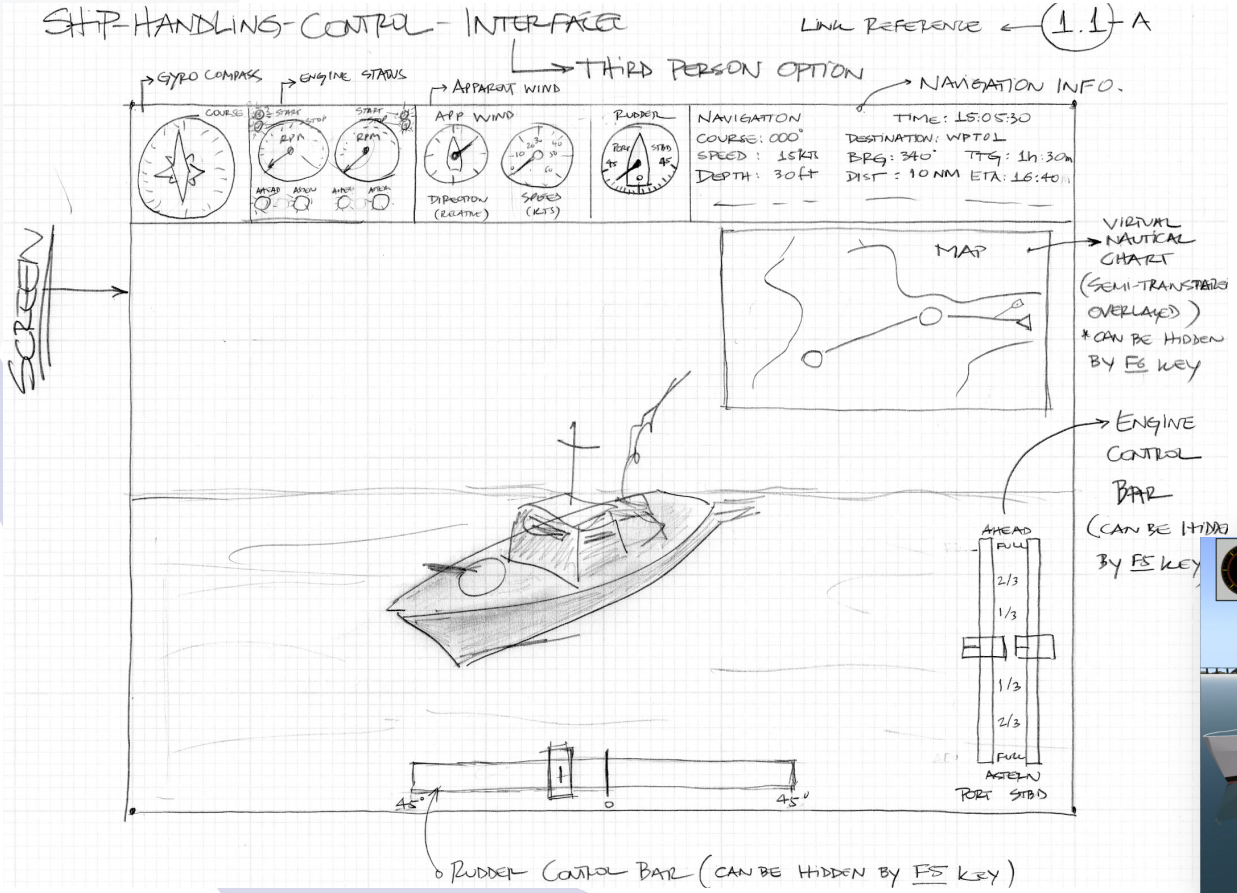
The solution found: YPSim

(Yard Patrol Simulator)

-Easily accesible simulator
-Game-based approach
-Part task training for basic shiphandling
-Coded in Open Source C++ libraries (Delta3D)
-Can run in a laptop
-Can be used in a Lab, multi-screen or CAVE

-Can be used as a instructional tool inside the classroom
-Could be prototyped in 2 years using the MOVES courses
-Can be easily expanded to other platforms
-Cannot do a lot of things also! (IMPORTANT)

YPSim development



Design features

- Internal representation of the bridge
- Principal instruments are modeled
- YP's Physics
- dtOcean
- Collision detection
- Mooring lines model
- Anchor and chain model
- AI agents: other ships, helmsman and navigator
- Radar
- Nautical chart
- Wind and current effects
- Network
- .50 cal
- others…

End user testing

Brazilian Naval Academy's midshipmen training with YPSim

Future Work

-Code optimization

-Training transfer study

-Intelligent tutoring

-Interoperability using HLA/DIS

-Physics model refinement

-Implementing AAR

-Tablet version???

-Exploring dtDirector (Delta3D)

Questions?